

TRI-PARTY AGREEMENT

Change Notice Number TPA-CN- 585	TPA CHANGE NOTICE FORM	Date: 09/10/2013
Document Number, Title, and Revision: DOE/RL-2013-35 100-HR-3 Groundwater Operable Unit Well Installation Sampling and Analysis Plan, Rev. 0		Date Document Last Issued: 07/23/2013
Originator Jane V. Borghese		Phone: 373-3809

Description of Change:

DOE/RL-2012-13-35 Rev 0 Tables 2-4 and 4-1 are revised to give detail on analytical method and the action needed for approval.

B.L. Charboneau and N. Menard/C. Guzzetti
DOE Ecology/EPA

agree that the proposed change modifies an approved workplan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records*, and not Chapter 12.0, *Changes to the Agreement*.

Table 2-4 *Analytical Performance Requirements for Water Samples* of DOE/RL-2013-35, Rev. 0 is revised to include additional analytes, and to move one analyte from the field measurements to the proper location under laboratory analysis.

Table 4-1 *Change Control* of DOE/RL-2013-35, Rev. 0 is revised to specify that DOE/RL project manager approval is needed and deleted notification to regulator when substituting analytical methods that meet or exceed analytical performance requirements specified in section 2.2.2 of DOE/RL-2013-35, Rev. 0, and that a revision to the plan (or a TPA Change Notice, if appropriate) is needed when substituting an analytical method that does not meet the analytical requirements provided in section 2.2.2.

Deleted text is indicated in ~~strikeout~~, added text is denoted by double underline.

Note: Pages 2-19, 2-23, and 4-1 are affected by this change.

Justification and Impacts of Change:

Table 2-4 revision states analytical requirements for constituents identified in addenda and places the analyte in the proper analysis type (e.g. field or laboratory).

Table 4-1 revision added text that indicates analyte can be analyzed by an alternate method as long as the method meets or exceeds requirements, clarifies that RL approval is required, and regulator notification is not.

Approvals:

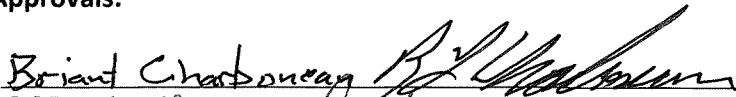

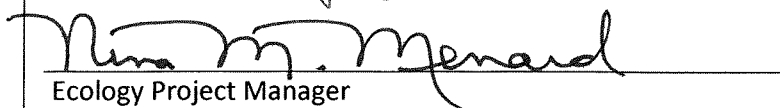
 Brian Charboneau DOE Project Manager	<u>9-10-2013</u> Date	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved
 EPA Project Manager	<u>9/10/13</u> Date	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved
 N. Menard Ecology Project Manager	<u>9/11/13</u> Date	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved

Table 2-4. Analytical Performance Requirements for Water Samples

CAS #	Analyte	Analytical Method ^a	Estimated Quantitation Limit ^b	Precision Requirement (%)	Accuracy Requirement (%)
Performance Requirements for Field Measurements					
—	Oxidation reduction potential	REDOX PROBE	N/A	— ^c	— ^c
—	pH measurement	PROBE	0.5 pH unit	— ^c	— ^c
—	Specific conductance	PROBE	1 µS/cm	— ^c	— ^c
—	Temperature	PROBE	—	— ^c	— ^c
—	Dissolved oxygen	PROBE	—	— ^c	— ^c
—	Turbidity	PROBE	0.1 Nephelometric Turbidity Unit	— ^c	— ^c
—	Alkalinity (as CaCO ₃)	Alkalinity 310.1	5,000 µg/L	±20%	80-120%
Performance Requirements for Laboratory Measurements (Radiological)					
12587-46-1	Gross alpha	GPC	3 pCi/L	≤30 ^d	70-130 ^d
12587-47-2	Gross beta	GPC	4 pCi/L	≤30 ^d	70-130 ^d
10045-97-3	Cesium-137	GEA	15 pCi/L	≤30 ^d	70-130 ^d
10198-40-0	Cobalt-60	GEA	25 pCi/L	≤30 ^d	70-130 ^d
14683-23-9	Europium-152	GEA	50 pCi/L	≤30 ^d	70-130 ^d
15585-10-1	Europium-154	GEA	50 pCi/L	≤30 ^d	70-130 ^d
13966-00-2	Potassium-40	GEA	4,000 pCi/L	≤30 ^d	70-130 ^d
10098-97-2	Strontium-90 ^e	Strontium-90	2 pCi/L	≤30 ^d	70-130 ^d
14133-76-7	Technetium-99	LSC –Technetium-99	15 pCi/L	≤30 ^d	70-130 ^d
10028-17-8	Tritium	LSC –Tritium	400 pCi/L	≤30 ^d	70-130 ^d

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CAS #	Analyte	Analytical Method ^a	Estimated Quantitation Limit ^b	Precision Requirement (%)	Accuracy Requirement (%)
Performance Requirements for Laboratory Measurements (Nonradiological)					
7440-36-0	Antimony	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	5 µg/L	≤20 ^f	80-120 ^f
7440-38-2	Arsenic	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	2 µg/L ^{hi}	≤20 ^f	80-120 ^f
7440-41-7	Beryllium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	2 µg/L	≤20 ^f	80-120 ^f
7440-39-3	Barium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	5 µg/L	≤20 ^f	80-120 ^f
7440-43-9	Cadmium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	2 µg/L ^{hi}	≤20 ^f	80-120 ^f
7440-70-2	Calcium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	1,000 µg/L	≤20 ^f	80-120 ^f
7440-47-3	Chromium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	10 µg/L	≤20 ^f	80-120 ^f
7440-48-4	Cobalt	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	2.6 µg/L	≤20 ^f	80-120 ^f
7440-50-8	Copper	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	8 µg/L	≤20 ^f	80-120 ^f
57-12-5	Cyanide ⁱ	EPA 9012	20 µg/L	≤20 ^f	80-120 ^f
18540-29-9	Hexavalent chromium ^l	EPA 7196 (Hexavalent chromium)	10 µg/L	≤20 ^f	80-120 ^f
7439-89-6	Iron	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	50 µg/L	≤20 ^f	80-120 ^f
7439-92-1	Lead	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	2 µg/L	≤20 ^f	80-120 ^f

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CAS #	Analyte	Analytical Method ^a	Estimated Quantitation Limit ^b	Precision Requirement (%)	Accuracy Requirement (%)
7439-96-5	Manganese	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	5 µg/L	≤20 ^f	80-120 ^f
7439-95-4	Magnesium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	750 µg/L	≤20 ^f	80-120 ^f
7439-97-6	Mercury	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	0.5 µg/L ^g	≤20 ^f	80-120 ^f
7440-02-0	Nickel	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	40 µg/L	≤20 ^f	80-120 ^f
7440-09-7	Potassium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	4,000 µg/L	≤20 ^f	80-120 ^f
7782-49-2	Selenium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	4 µg/L	≤20 ^f	80-120 ^f
7440-22-4	Silver	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	2 µg/L ^{gh}	≤20 ^f	80-120 ^f
7440-23-5	Sodium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	500 µg/L	≤20 ^f	80-120 ^f
7440-24-6	Strontium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	10 µg/L	≤20 ^f	80-120 ^f
7440-28-0	Thallium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	2 µg/L ^{gh}	≤20 ^f	80-120 ^f
7440-61-1	Uranium	Total uranium (chemical)	15 µg/L	≤20 ^f	80-120 ^f
7440-62-2	Vanadium	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	25 µg/L	≤20 ^f	80-120 ^f
7440-66-6	Zinc	Trace – ICP (6010) or ICP/MS (6020 or 200.8)	10 µg/L	≤20 ^f	80-120 ^f

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CAS #	Analyte	Analytical Method ^a	Estimated Quantitation Limit ^b	Precision Requirement (%)	Accuracy Requirement (%)
75-35-4	1,1-Dichloroethene	EPA 8260 (VOCs)	2 µg/L ^h	Statistically Derived ^k	Statistically Derived ^k
71-43-2	Benzene	EPA 8260 (VOCs)	0.8 µg/L	Statistically Derived ^k	Statistically Derived ^k
56-23-5	Carbon tetrachloride	EPA 8260 (VOCs)	1 µg/L	Statistically Derived ^k	Statistically Derived ^k
67-66-3	Chloroform	EPA 8260 (VOCs)	5 µg/L	Statistically Derived ^k	Statistically Derived ^k
79-01-6	Trichloroethene	EPA 8260 (VOCs)	1 µg/L	Statistically Derived ^k	Statistically Derived ^k
75-01-4	Vinyl Chloride	EPA 8260 (VOCs)	1 µg/L	Statistically Derived ^k	Statistically Derived ^k
16887-00-6	Chloride	EPA 300.0 (anions by IC)	400 µg/L	≤20 ^f	80-120 ^f
16984-48-8	Fluoride	EPA 300.0 (anions by IC)	500 µg/L	≤20 ^f	80-120 ^f
14797-55-8	Nitrate (as N)	EPA 300.0 (Anions by IC)	100 µg/L	≤20 ^f	80-120 ^f
14797-65-0	Nitrite (as N)	EPA 300.0 (Anions by IC)	100 µg/L	≤20 ^f	80-120 ^f
14808-79-8	Sulfate	EPA 300.0 (Anions by IC)	550 µg/L	≤20 ^f	80-120 ^f
N/A	Pesticides ⁱ	EPA 8081	0.5 to 5 µg/L	Statistically Derived ^k	Statistically Derived ^k
N/A	PCBs ⁱ	EPA 1668A	0.02 µg/L	Statistically Derived ^k	Statistically Derived ^k
N/A	PCBs ⁱ	EPA 8082	5 µg/L	≤20 ^j	80-120 ^j
N/A	Polynuclear aromatic hydrocarbons ⁱ	EPA 8310	0.5 to 5 µg/L	Statistically Derived ^k	Statistically Derived ^k

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CAS #	Analyte	Analytical Method ^a	Estimated Quantitation Limit ^b	Precision Requirement (%)	Accuracy Requirement (%)
N/A	Semivolatile organic compounds ⁱ	EPA 8270	10 to 50 µg/L	Statistically Derived ^k	Statistically Derived ^k
==	<u>Alkalinity (as CaCO₃)</u>	<u>2320 Alkalinity</u>	<u>5,000 µg/L</u>	<u>±20%</u>	<u>80-120%</u>
==	<u>Carbonate</u>	<u>2320 Alkalinity</u>	<u>5,000 µg/L</u>	<u>±20%</u>	<u>80-120%</u>
==	<u>Bicarbonate</u>	<u>2320 Alkalinity</u>	<u>5,000 µg/L</u>	<u>±20%</u>	<u>80-120%</u>
==	<u>Total Carbonate</u>	<u>2320 Alkalinity</u>	<u>5,000 µg/L</u>	<u>±20%</u>	<u>80-120%</u>

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Sources:

40 CFR 141.62, "National Primary Drinking Water Regulations," "Maximum Contaminant Levels for Inorganic Contaminants."

40 CFR 141.66, "National Primary Drinking Water Regulations," "Maximum Contaminant Levels for Radionuclides."

40 CFR 143.3, "National Secondary Drinking Water Regulations," "Secondary Maximum Contaminant Levels."

EPA-600/4-79-020, *Methods for Chemical Analysis of Water and Wastes*.

EPA-600/R-94-111, *Methods for the Determination of Metals in Environmental Samples, Supplement I*.

SW-846, 2007, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*.

WAC 173-201A, "Water Quality Standards for Surface Waters of the State of Washington."

WAC 173-340-720(4), "Model Toxics Control Act—Cleanup," "Ground Water Cleanup Standards," "Method B Cleanup Levels for Potable Ground Water."

a. Equivalent methods may be substituted. For EPA Method 300.0, see EPA-600/4-79-020. For EPA Method 200.8, see EPA-600/R-94-111. For the four-digit EPA methods, see SW-846 Methods SW-846 8260 and 8270.

b. Estimated quantitation limits are obtained from the Waste Sampling and Characterization Facility statement of work for analytical services provided to CHPRC S&GRP.

c. Field measurements have no specific quality control requirement except to perform checks to verify manufacturer's expected performance.

d. Accuracy criteria shown are for associated batch laboratory control sample percent recoveries. Except for GEA, additional accuracy criteria include analysis-specific evaluations performed for matrix spike, tracer, and/or carrier recoveries, as appropriate to the method. The precision criteria shown are for batch laboratory replicate sample relative percent differences.

e. Strontium-90 will be assessed as total radioactive strontium.

f. Accuracy criteria specified are for calculated percent recoveries for associated analytical batch matrix spike samples. Additional accuracy evaluation based on statistical control limits for analytical batch laboratory control samples is also performed. The precision criteria shown is for batch laboratory replicate matrix spike or replicate sample relative percent differences.

g. To meet or approach calculated action levels, laboratories must use axial-based ("trace") ICP analytical methods. The laboratory also may substitute graphite furnace or ICP/MS methods if estimated quantitation limits are met.

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h. Action levels are less than established analytical methodology capabilities. The analytical detection limits will be used for working levels, and will be periodically reviewed to establish if lower detection limit capabilities have become available.

i. If a validated detection is obtained, sample collection and analysis for this method at the well will be performed for all subsequent sample events. If there is no validated detection for an analyte or method from the initial scheduled event(s) at the well, that analyte and/or method will be dropped from the analytical suite for the well for subsequent sampling events.

j. Accuracy criteria shown are the minimum for associated batch laboratory control sample percent recoveries. Laboratories must meet statistically based control limits, if more stringent. Additional accuracy criteria include analyte-specific evaluations performed for matrix spike and surrogate recoveries, as appropriate to the method. The precision criteria shown are for batch laboratory replicate matrix spike analysis relative percent differences. Tentatively identified compounds will be reported for SW-846 Methods 8260 and 8270.

k. Determined by the laboratory based on historical data or statistically-derived control limits. Limits are reported with the data. Where specific acceptance criteria are listed, those acceptance criteria may be used in place of statistically derived acceptance criteria.

l. Hexavalent chromium analysis could be performed using a HACH© Test kit for screening purposes.

CAS	=	Chemical Abstracts Service	MCL	=	maximum contaminant level
CCC	=	criterion continuous concentration	MS	=	mass spectroscopy
GEA	=	gamma energy analysis	N/A	=	not applicable
GPC	=	gas proportional counter	NV	=	no value
IC	=	ion chromatography	PCB	=	polychlorinated biphenyl
ICP	=	inductively coupled plasma	VOC	=	volatile organic compound
LSC	=	liquid scintillation counter	WAC	=	<i>Washington Administrative Code</i>

4 Change Management

Changes to this SAP and addenda will be reviewed and approved by DOE and the lead regulatory agency prior to implementation. Table 4-1 defines the types of changes that may be made to the documents.

A revision to this document may be necessary after a certain number (e.g., 5) of TPA (Ecology et al., 1989) change notices, at a major change in sampling, or at the request of the regulatory agency.

Table 4-1. Change Control

Type of Change	Action	Documentation
Adding constituents, or increasing sampling, <u>or substituting an analytical method that meets or exceeds analytical performance requirements provided in section 2.2.2.</u>	DOE-RL Project Manager approval; notify regulator.	Project's schedule tracking system
Eliminating constituents, <u>or</u> wells, decreasing sampling, or a change in analytical method/ quantitation limit to one that does not meet the analytical performance requirements provided in section 2.2.2.	Revise sampling and analysis plan (or TPA Change Notice, if appropriate); obtain DOE and regulatory approval; distribute plan.	Letter report documenting changes or revised plan (or approved TPA Change Notice)
Well construction material or depth	DOE-RL Project Manager approval; notify regulator.	Project's schedule tracking system
Well type	Revise sampling and analysis plan (or TPA Change Notice, if appropriate); obtain DOE and regulatory approval; distribute plan.	Letter report documenting changes or revised plan (or approved TPA Change Notice)
DOE	= U.S. Department of Energy	
DOE-RL	= U.S. Department of Energy, Richland Operations Office	
TPA	= Tri-Party Agreement (Ecology et al., 1989, <i>Hanford Federal Facility Agreement and Consent Order</i>)	